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Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D C 20554

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FEDERAL COMMUNICATIONS COMMISSION  
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In the Matter of

Rulemaking to Amend Parts 1, 2, 21 and 25  
of the Commission's Rules to Redesignate  
the 27.5-29.5 GHz Frequency Band, to  
Reallocate the 29.5-30.0 GHz Frequency Band,  
and to Establish Rules and Policies for Local  
Multipoint Distribution Service and for  
Fixed Satellite Services

CC Docket No. 92-267

297

Fourth Notice of Proposed Rulemaking

**COMMENTS OF TEXAS INSTRUMENTS, INC.**

Robert L. Pettit  
Michael K. Baker  
Wiley, Rein & Fielding  
1776 K Street N.W.  
Washington, D.C. 20006

Their Attorneys

August 12, 1996

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## TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND SUMMARY . . . . .	1
II. RAPID DEPLOYMENT OF INTERACTIVE LMDS INFRASTRUCTURE WILL PRODUCE A WEALTH OF CONSUMER BENEFITS . . . . .	2
III. THE COMMISSION SHOULD MOVE FORWARD WITH THE AUCTION OF SPECTRUM AND IMPLEMENTATION OF LMDS AS SOON AS POSSIBLE, BUT IN NO EVENT LATER THAN THE END OF THIS YEAR . . . . .	5
IV. ADDITIONAL SPECTRUM SHOULD BE ALLOCATED TO LMDS . . . . .	8
A. TI Supports the Designation of the 31.0-31.3 GHz Band to LMDS on a Primary Protected Basis . . . . .	8
B. TI Supports the FCC's Plan to Secure Additional Spectrum for LMDS . . . . .	10
V. THE COMMISSION SHOULD TAKE MEASURES TO FACILITATE EXPANDED LMDS USE OF THE 29.1-29.25 GHZ BAND SEGMENT . . . . .	10
VI. CONCLUSION . . . . .	12

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**COMMENTS OF TEXAS INSTRUMENTS, INC.**

Texas Instruments, Inc. ("TI"), by its attorneys, hereby submits its comments in the above-captioned Fourth Notice of Proposed Rulemaking ("*Fourth Notice*").<sup>1</sup>

**I. INTRODUCTION AND SUMMARY**

TI welcomes the Commission's decision -- after nearly four years of deliberation -- to adopt a band plan in the 27.5-29.5 GHz frequency band that will allow the development of Local Multipoint Distribution Service ("LMDS") to begin. While far from perfect, TI believes that the FCC's action in the *First Report and Order* nonetheless will permit LMDS business plans to go forward and enable American consumers to enjoy the benefits of

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<sup>1</sup> Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, and to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services (First Report and Order and Fourth Notice of Proposed Rulemaking), CC Docket No. 92-267, FCC 96-311 (rel. July 22, 1996)

increased choice and competition in the provision of telecommunications services. TI also applauds the Commission's recognition of "the need to designate additional spectrum for LMDS" in order to realize the true potential of the new service.<sup>2</sup> However, TI strongly believes that the need for additional spectrum -- desirable though it is -- should not further delay the construction and operation of LMDS systems. Accordingly, TI urges the Commission to proceed expeditiously to auction spectrum and implement LMDS as planned by the end of this year.

## **II. RAPID DEPLOYMENT OF INTERACTIVE LMDS INFRASTRUCTURE WILL PRODUCE A WEALTH OF CONSUMER BENEFITS**

If adequate spectrum is made available, LMDS could offer an infrastructure capable of supplying a tremendous array of advanced, broadband telecommunications services. Indeed, the record in this proceeding is replete with numerous examples of public benefits that LMDS could bring to the American people. As the Commission itself recognized in the *First Report and Order*:

The wealth of innovative services possible with the LMDS broadband spectrum we make available includes two-way video, teleconferencing, telemedicine, telecommuting, data services and global networks. LMDS systems have the capacity to provide broadband video-on-demand and distance learning. Moreover, LMDS' cellular-like capabilities enable it to offer diverse services within the same region, and to jointly offer services traditionally provided by separate communications service providers.<sup>3</sup>

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<sup>2</sup> *Fourth Notice* at ¶ 100.

<sup>3</sup> *First Report and Order* at ¶ 15. As the Commission stated in initiating this docket in 1992, LMDS technology "offers the promise for a wide variety of applications that could be tailored to local interests." Rulemaking to Amend Parts 1, 2, 21 and 25 of the

With sufficient spectrum, TI and others that have filed comments in this proceeding envision an infrastructure that could provide a near-term, flexible, relatively inexpensive wireless platform for the provision of: video conferencing and other video services for businesses and hospitals; video distance learning facilities for schools and universities; high-speed Internet connections for both homes and businesses; multiple channels of one-way video; the capability for video on demand supported with LMDS return links; and even real time video on demand.<sup>4</sup>

Not surprisingly, there is substantial interest in the video, telephony, and data technologies that LMDS facilitates, as well as the variety of services that can be supported on this LMDS platform. As the Commission recognized four years ago in proposing a two gigahertz allocation for LMDS, the record

indicates a significant interest in both the technology and the service. Coupled with the volume of public inquiry regarding the service, we find that there is strong public interest in the proposed [creation of the service].<sup>5</sup>

That interest has grown immeasurably during the last four years as indicated by the number

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Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, and to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services (Notice of Proposed Rulemaking, Order, Tentative Decision, and Order on Reconsideration)), 8 FCC Rcd 557, 559 (1993) ("*First Notice*").

<sup>4</sup> See, e.g., *Ex Parte* Presentation of Texas Instruments, Inc., June 7, 1995; *Ex Parte* Presentation of Texas Instruments, Inc., April 27, 1995; Letter of Michael R. Gardner, P.C., January 12, 1994.

<sup>5</sup> *First Notice*, 8 FCC Rcd at 559.

of potential providers who have expressed enthusiasm for the service.<sup>6</sup>

As the Commission is aware, all of the services discussed at length in this proceeding -- and more -- can be provided through LMDS.<sup>7</sup> In fact, given the remarkable spectrum efficiency of LMDS,<sup>8</sup> as well as the technologically advanced system designs of LMDS equipment, like TI's wholly digital MultiPoint™ system, all of these services can be provided simultaneously from the same LMDS facility. But they can be provided *only if* sufficient spectrum is allocated, *if* the Commission's rules allow sufficient service flexibility and --

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<sup>6</sup> It also is not surprising that "LMDS has attracted attention from both developed and developing countries." *First Report and Order* at ¶ 16. In fact, one of the ironies of this lengthy proceeding is that LMDS -- an American-developed technology -- is being implemented abroad even though it waits for final approval from the FCC for use in the United States. As the Commission has noted

Canada has begun licensing this technology (called LMCS) in three gigahertz of spectrum in the frequency band 25.35 to 28.35 GHz. At least six other countries, including Mexico and Venezuela, have licensed LMDS on an experimental or permanent basis in the 28 GHz band. LMDS developers offer the prospect of modern wireless telephone systems, video distribution, and other communications services to developing countries that lack wireline or cable infrastructure.

*Id.*

<sup>7</sup> The FCC has stated its expectation that

LMDS providers will offer facilities-based competition to traditional cable and telephone carriers -- greatly enhancing customer choice, and facilitating the rapid dissemination of innovative communications services with the entry of multiple providers into the market.

*Id.* at ¶ 14.

<sup>8</sup> As the Commission has repeatedly recognized, since the cells used for LMDS "are small, and arranged in a typical cellular pattern, a very high level of frequency reuse is possible." *Id.*

most importantly -- *if* the Commission acts soon to allow LMDS to go forward to auction and implementation.<sup>9</sup> Yet, despite the vast array of potential services, despite the strong business and public interest in this technology and these services, even despite the fact that LMDS will undoubtedly bring in hundreds of millions of deficit-reducing dollars to the U.S. Treasury, the Commission still has not finally authorized LMDS to go forward. To the contrary, LMDS has seen its proposed 28 GHz allocation cut in half and has been delayed yet again while the Commission looks for additional LMDS spectrum. Hence, as set forth below, TI urges the Commission to speed the prompt deployment of LMDS, even while important additional spectrum initiatives are pending

**III. THE COMMISSION SHOULD MOVE FORWARD WITH THE AUCTION OF SPECTRUM AND IMPLEMENTATION OF LMDS AS SOON AS POSSIBLE, BUT IN NO EVENT LATER THAN THE END OF THIS YEAR**

The Commission should act with dispatch to allow the operation of LMDS systems. As stated above, LMDS proponents already have waited for nearly four years for the

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<sup>9</sup> Ironically, these are the same principles that have guided the Commission from the beginning of this proceeding. As the Commission stated nearly four years ago:

Among the primary regulatory objectives of this proceeding are providing applicants in this band sufficient flexibility to satisfy consumer demand, expediting service to the public . . . . We intend that the rules we promulgate in this proceeding reflect the maximum flexibility for licensees to construct communications systems in which the public is interested . . . . We therefore seek to establish rules that provide adequate spectrum for multipoint video programming distribution services and to provide sufficient flexibility to accommodate different types of point-to-point and point-to-multipoint communications services.

*First Notice*, 8 FCC Rcd at 559-60.

Commission to authorize the service -- four years in which technology has existed, but investments in infrastructure and jobs in a new industry have not been made while the industry has waited for a decision from the FCC.

This situation is especially distressing because American-developed LMDS technology has been proven and is ready to be implemented now. In fact, as noted above, LMDS already is becoming an important and active international business, and the United States stands to be *the* major force in the global development of LMDS. However, despite the fact that plans and hopes for domestic service already have languished over the course of three major comment periods, an extensive negotiated rulemaking proceeding and exhaustive *ex parte* presentations, the FCC has elected to seek yet another round of comments before finally authorizing LMDS.

The Commission should not allow the *Fourth Notice* to delay the auction of LMDS spectrum beyond the end of this year. While TI believes that additional spectrum is desirable and praises the Commission's vow to allocate additional spectrum in an "expeditious" manner, realistically the reallocation may prove to be more difficult than anticipated. Indeed, the history of this proceeding teaches that even the best-intentioned regulatory plans may go awry. Surely, the Commission never intended that it would take nearly four years to devise a band plan for the 28 GHz spectrum. The window of opportunity available for LMDS technology simply cannot wait -- nor should it have to wait -- for another months-long or years-long spectrum allocation process. This is particularly true given the rapidly evolving nature of the information-infrastructure sector of the economy, which is driven by innovation and new technology.



Timely and decisive action is necessary if the United States is to keep abreast of rapidly emerging international LMDS markets. As noted above,<sup>10</sup> applications already have been filed for Canadian LMCS systems, and licenses are expected to be awarded in the next few weeks. Central and South American countries also are moving to quickly implement LMDS. It would be regrettable indeed if further regulatory delay denied American consumers the benefits of a technology developed in the United States.

Moreover, there is a broad consensus that the FCC must act quickly to allow the launch of LMDS services. In addition to industry calls for action, Congress has indicated its desire to move to immediate auctions. On May 22, 1996, the United States Senate adopted a "Sense of the Senate" resolution calling upon the FCC to "act expeditiously and without further delay to conduct auction of [LMDS] licenses in a manner that maximizes revenue, increases efficiency, and enhances competition." Individual members of Congress have also voiced their support for immediate auction of LMDS spectrum.

For these reasons, TI believes that unless the FCC can act quickly on the proposal for additional spectrum (as suggested below), the Commission should simply move ahead with the auction and implementation of LMDS based on the one gigahertz of spectrum already allocated by the *First Report and Order*. The Commission's first priority in this docket should be assuring the commencement of service as soon as possible.

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<sup>10</sup> See *supra* note 6

#### IV. ADDITIONAL SPECTRUM SHOULD BE ALLOCATED TO LMDS

As the Commission has recognized, there is a "need to designate additional spectrum for LMDS."<sup>11</sup> Indeed, the Commission originally proposed two gigahertz of spectrum for LMDS in order to allow for the operation of two competitive, interactive, full-service LMDS providers.<sup>12</sup> The existing record in this proceeding overwhelmingly supports the need for more than one gigahertz of spectrum for LMDS. Additional spectrum could be used for interactive services, could provide spectrum for special LMDS applications, and could enhance competition among LMDS service providers.<sup>13</sup> Moreover, increased spectrum could pave the way for a variety of future applications, yet to be conceived, that would serve the needs and interests of businesses and consumers in the rapidly evolving information-based economy.

##### A. TI Supports the Designation of the 31.0-31.3 GHz Band to LMDS on a Primary Protected Basis

For the above reasons, TI fully supports the Commission's proposed allocation of the 31.0-31.3 GHz band for use by LMDS on a primary basis. TI believes that the only way to reallocate the 31 GHz band quickly is to do exactly *and only* what the Commission has

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<sup>11</sup> *Fourth Notice* at ¶ 100.

<sup>12</sup> *First Notice*, 8 FCC Rcd at 560.

<sup>13</sup> *Id.* at 558-560; Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, and to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services (Third Notice of Proposed Rulemaking and Supplemental Tentative Decision), 11 FCC Rcd 53, 82-82 (1995).

proposed in the *Fourth Notice*: simply change the FCC's table of allocation to allow LMDS to use the band on a primary basis. Only secondary users now occupy the 31 GHz band, and, according to the Commission, "existing usage appears to be relatively light and geographically concentrated."<sup>14</sup> Under well-established Commission precedent, secondary users are entitled to no interference protection.<sup>15</sup> As the Commission has stated, its applicable rules "explicitly provide that authorized operations at 31 GHz are not afforded any rights or obligations with respect to interference with other licensed operations."<sup>16</sup> As with all secondary users (and in accordance with Commission precedent), the existing users of 31 GHz have assumed all the risks of their operation.

TI is still exploring with incumbents the technical operational characteristics of the existing users of 31 GHz. Hence, TI cannot now venture an opinion as to whether LMDS systems could accommodate the current users of the band. In order to mitigate interference concerns, however, TI strongly supports the Commission's suggestion that the FCC accept no new applications, modifications, or renewal applications in the 31 GHz band.<sup>18</sup>

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<sup>14</sup> *Fourth Notice* at ¶ 102.

<sup>15</sup> See 47 C.F.R. §§ 2.104(d), 2.105(c).

<sup>16</sup> *Fourth Notice* at ¶ 102.

<sup>17</sup> If existing users require protection from interference, they should be removed to other bands -- perhaps to the 23 GHz band as suggested by the Commission. Moreover, since the users of the 31 GHz band are secondary and entitled to no protection, it follows that they likewise are entitled to no compensation to the extent that they are removed from the band or have to alter or cease operation because of interference to a primary user.

<sup>18</sup> *Id.* at ¶ 103.

B. TI Supports the FCC's Plan to Secure Additional Spectrum for LMDS

TI also supports the Commission's search for additional spectrum for LMDS. The Commission has suggested a variety of other ways in which the additional spectrum needs of LMDS could be accommodated in other bands. TI pledges to work with the Commission in any way it can to identify and reallocate additional spectrum for LMDS. TI enthusiastically supports the Commission's direction to its staff to continue discussions with NTIA to "explore the feasibility of share use or reallocation of at least part of the 25.25-27.0 and 27.0-27.5 GHz bands to LMDS. As the Commission has stated, "more in-depth sharing studies of fixed services and LMDS and Government spectrum below 27.5 GHz may yield more positive results."<sup>19</sup>

V. **THE COMMISSION SHOULD TAKE MEASURES TO FACILITATE EXPANDED LMDS USE OF THE 29.1-29.25 GHZ BAND SEGMENT**

TI urges the Commission to use the *Fourth Notice* as an opportunity to clarify the possible expanded use of the 29.1-29.25 GHz band by LMDS. In the *First Report and Order*, the Commission determined that LMDS subscriber-to-hub links would not be allowed in the 29.1-29.25 GHz band even though LMDS would be a "co-primary" user of the band.<sup>20</sup> However, the Commission also suggested that it would reconsider this limitation at some future time. The Commission variously described this possibility as based on an

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<sup>19</sup> *First Report and Order* at ¶ 39.

<sup>20</sup> *Id.* at ¶ 71.

agreement among the parties "that LMDS return links can operate here in this band under mutually acceptable sharing criteria"<sup>21</sup> or an ability by LMDS proponents "to demonstrate definitively that they can technically operate" return links in the band "on a non-interference basis."<sup>22</sup>

To facilitate and expedite this process, TI requests that the Commission expressly define the interference criteria for testing. Specifically, TI recommends that non-interference demonstrations be based on link availability and bit error rates, rather than a noise floor. With this added certainty, TI would be willing and able to conduct tests. Indeed, TI would support appropriate field testing of both hub-to-subscriber and return link transmissions to measure the effect on MSS feeder links in the 29.1-29.25 GHz band.

Further, because the 150 MHz may prove to be unduly limiting as a one-way allocation -- even if coupled somehow with the 850 MHz primary allocation -- TI urges the Commission to clarify on what basis it would reconsider the limitation on LMDS use of the band. Specifically, would subscriber-to-hub devices be allowed to operate on a co-primary basis? If not, how would an LMDS operator go about "demonstrat[ing] definitively" that such usage should be allowed?

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<sup>21</sup> *Id.* at ¶ 37.

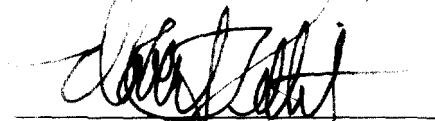
<sup>22</sup> *Id.* at ¶ 98.

## VI. CONCLUSION

Consistent with the foregoing, TI welcomes the Commission's action to make possible LMDS and its efforts to obtain the necessary additional spectrum for the service. However, TI believes that it is critical to the development of LMDS for the Commission to auction spectrum and authorize the service by the close of 1996. Hence, if necessary to meet this goal, the Commission should temporarily defer action on the proposed 31.0-31.3 GHz designation, as well as any measures to facilitate expanded LMDS use of 29.1-29.25 GHz, in order to complete promptly the *Fourth Notice* proceeding. TI believes that only by expeditiously laying the groundwork for swift commencement of LMDS will the Commission ensure the timely deployment of new competitive services and realize the attendant consumer and business benefits in the near future.

Respectfully submitted,

TEXAS INSTRUMENTS, INC.



Robert L. Pettit

Michael K. Baker

Wiley, Rein & Fielding

1776 K Street N.W.

Washington, D.C. 20006

Its Attorneys

August 12, 1996